# The Performance of Collective and Individual Bargaining: A Comprehensive and Granular Analysis of Different Bargaining Systems on Company Productivity

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**Abstract:** Using representative company level data for all member states of the European Union, we analyze the relationship between different processes and institutional structures of collective bargaining against the development of company labor productivity. Our results clearly show that different processes and institutional structures of collective bargain have very different effects. While show that some processes and structures of collective bargaining – specifically sectorally uncoordinated systems – appear to be detrimental to company performance, the opposite can be said about sectorally coordinated systems. The latter are highly beneficial for economic performance. Thus, what matters are the processes and institutional structures in which collective bargaining is embedded and not the question whether bargaining should be conducted collectively or individually.

**Keywords:** Collective bargaining; labor productivity; cross-country comparison; European Union

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## Introduction

The comparative academic literature on collective bargaining is characterized by the presence of many controversies. A prominent one is the disagreement among scholars of the effects and performance of collective bargaining. Among the reasons for this disagreement are that evidence comes from different disciplines with different methodological and theoretical approaches (e.g., Frege, 2007), differences in the performance measures that are used (e.g., Freeman, 2014; Hayter, 2011), as well as differences in the choice of the processes and institutional structure of collective bargaining, i.e. *collective bargaining systems*, which are hypothesized to explain differences in the performance (e.g., Soskice, 1990). While specific details on the latter are open to debate, there appears to exist an overarching agreement that collective bargaining systems differ significantly across individual countries and especially across specific regions (e.g., European Commission, 2014).

There is also agreement in the literature that differences in collective bargaining systems reflect differences in the history, culture and social norms across countries and regions (e.g., Flanagan, 1999; Kochan, Katz, and McKersie 1994). These materialized in differences in the role of collective bargaining for socio-economic policy making (e.g., Carlin and Soskice, 1990), in differences in the legal support of collective bargaining by the state (e.g., Traxler, Blaschke, and Kittel 2001) as well as in differences in the institutional and organizational frameworks in which bargaining takes place (e.g., Crouch 1993; Gernigon, Odero, and Guido 2008; Heyes, 2013; Sturn, 2013).

Even though current collective bargaining systems are deeply rooted in the socio-economic context of countries and regions, these systems were also constantly challenged by policy makers who became gradually aware that collective bargaining systems matter for economic performance of companies, industries, and countries (Calmfors and Driffill, 1988, p. 14;

OECD, 2017, 2018, 2019). In particular since the beginning of the economic crisis of 2008, national and international policy makers have become increasingly aware of the role of collective bargaining in addressing the challenges of labor market adjustment, leading to reforms to bargaining systems in some countries (Müller, Vandaele and Waddington, 2019; Tridico, 2013; Visser, 2016). This effect was particularly pronounced in the “Troika countries” such as Cyprus, Greece, Ireland, Spain, and Portugal, i.e. the countries that were unable to repay their government debt and received financial support from the European Commission (EC), the European Central Bank (ECB) and the International Monetary Fund (IMF) (e.g., Crouch 2012; Marginson 2015) but change and pressure to reform collective bargaining systems was also observable in previously resilient countries such as for example in Denmark, Norway and Sweden (e.g. Arnholtz, Meardi, and Oldervoll, 2018; Dølvik and Marginson, 2018; Dølvik et al., 2018).

However, there is considerable disagreement in academic and political debates about the impact and success of these reforms (e.g., Blanchard, Jaumotte and Loungani, 2014; IMF, 2015; Koukiadaki and Grimshaw, 2016; Marginson, 2017). Much of this disagreement comes from an uncertainty in the literature on the effects, or using the terminology of Calmfors and Driffill (1988), on the performance of different collective bargaining systems (e.g., OECD, 2004). We argue in this paper that some of this uncertainty is based on an insufficient consideration of the role of coordination between different collective bargaining units. Our argument follows evidence from country-level studies which suggests that the degree of coordination between different bargaining units affects various country-level aggregates (e.g., Calmfors and Driffill, 1998; Soskice, 1990; Traxler, Blaschke, and Kittel, 2001). As national collective bargaining systems became increasingly hybrid in the recent past (e.g., Brandl and Bechter, 2018), one disadvantage of country-level studies is that they are not able to capture any current within country variation of collective bargaining systems across sectors and companies, i.e. the fact that different collective bargaining systems can exist in different sectors and companies within a country (e.g., Bechter, Brandl, and Meardi, 2012; Doucouliagos, Freeman, and Laroche, 2017). Germany is a good example which was discussed in literature repeatedly which shows the within-country and sector variation well (e.g., Dustmann et al., 2014; Müller and Schulten, 2019; Schulten and Bispinck, 2018). Thus, any company level analysis that captures the within-country variation is certainly providing additional insights to macro-level analyses.

The few existing company-level studies have typically either not considered the role of coordination between different collective bargaining units (e.g., Boeri, 2014) and/or are based on a very limited sample of bargaining systems, often analyzing the diversity in bargaining system variation in just one country and only occasionally comparing it with one or two others (e.g., Daouli et al., 2013; Gartner, Schank, and Schnabel, 2013; Granqvist and Regnér, 2008; Grimshaw, 2008; van Ours and van de Wijngaert, 1996). The analysis of collective bargaining systems in a single or limited number of countries certainly limits any attempt at generalization, which would be needed to place any policy recommendations regarding reforms of other countries' collective bargaining system on firm ground.

This paper aims to mitigate these problems in three ways. First, we differentiate collective bargaining systems not only by the level at which bargaining takes place, but also by the degree to which bargaining is coordinated between different units. Second, exploiting the availability of high-quality company-level micro data from across Europe and analyzing the performance of different systems at the company level, we can fully capture the heterogeneity of collective bargaining within countries. Third, we explicitly compare the performance of a wide range of different collective bargaining systems in all member states of the European Union (EU). Furthermore, we use the change in company labor productivity as a performance indicator and will argue in favor of its superiority and validity compared to other indicators frequently used before. Thus, taken together, this paper provides a comprehensive and in-depth, i.e. granular, investigation of the relationship between different collective bargaining systems and company performance, in our case the development of labor productivity of companies.

The structure of the article is as follows: we begin by giving an overview of how collective bargaining systems differ and by summarizing the literature on why they differ across companies, sectors, countries, and regions. We then address the implication of these differences for the performance of companies. Our hypotheses are then tested on the basis of a comprehensive company level data set which covers information on collective bargaining systems for a representative sample of companies in all member states of the European Union. We conclude by summarizing the findings and discuss their implications for the future of collective bargaining in the EU.

**Historical Differences in Collective Bargaining**

It is well documented that collective bargaining differs across countries and regions (e.g., Aumayr-Pintar et al., 2014; European Commission, 2014; Flanagan, 1999). These differences arise in various aspects of collective bargaining and include for example the role of collective bargaining for socio-economic policy making (e.g., differences in the involvement of collective bargaining actors in the development of public policies), differences in the legal support of collective bargaining provided by the state (e.g., differences in the provision of *erga omnes* clauses for the extension of collective agreements) as well as differences in the institutional and organizational frameworks in which bargaining takes place (e.g., differences in the domain of bargaining) (e.g., Hayter and Visser, 2018). Together, such differences form different systems of collective bargaining that have evolved based on different traditions and along distinct cultural and historical trajectories (Crouch, 1993). Thus, the reason why collective agreements cover many (as typical for example in the Nordic countries) or only a few employees (as typical for example in Central and Eastern European countries) or why collective bargaining takes place at the company (as typical for example in Anglo-Saxon countries) or at a higher level (as typical in continental European countries), has more to do with countries' deep and historically grown bargaining systems than with any specific actors' preferences and interests (e.g., Hall and Soskice, 2001).

Among the member states of the EU, it became widely accepted to differentiate between five distinct employment relations regimes in which countries' collective bargaining systems share very similar characteristics (European Commission 2009): the "Nordic regime" (Denmark, Finland, and Sweden), the "Continental regime" (Austria, Belgium, Germany, Luxembourg, Netherlands, and Slovenia), the "Liberal regime" (Cyprus, Ireland, Malta, and the UK) the "Southern regime" (France, Greece, Italy, Spain, and Portugal), and finally the "Central and Eastern European (CEE) regime" (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia). The latter is also the most recent grouping as it emerged because of the political, social, and economic transformation in these countries in the early 1990s.

Although many of these regimes and their respective systems of collective bargaining have a long history, they have also been continually contested and exposed to pressure of reform. This pressure has covered different aspects of collective bargaining and came both from within, i.e. endogenously as it came from actors involved in collective bargaining, as well as exogenously from outside, e.g. from the state or from international organizations such as the IMF (e.g., Brandl and Bechter, 2018). Although debates around the reform of collective bargaining systems cover a wide range of aspects, in the past three decades, they have focused mainly on changes in the level of collective bargaining and specifically pointed towards increased *decentralization*, i.e. the strengthening of lower level bargaining or no bargaining to the expense of higher-level, i.e. sectoral and national, bargaining (e.g., Marginson, 2015).

However, the way and forms how collective bargaining systems were decentralized differs across different countries with different traditional systems of collective bargaining as well as the effects of decentralization differed. For instance, in countries with encompassing higher level collective agreements an rents that are generated in some part of the economy are distributed equally across a large domain. Any deviation towards a lower level collective or individual agreement, which would be possible by the introduction of opt out regulations, enables rent seeking behavior by different actors (e.g., Blanchflower, Oswald, and Sanfey, 1996; Rusinek and Rycx, 2013) and thus leads to possible market dysfunctions and unfair competition among companies. Which groups, e.g. companies or groups of employees, are affected positively or negatively by the decentralization of collective bargaining depends very much upon contextual factors and varies over time (e.g. Amable, 2014; Crouch, 1993; Dølvik and Marginson, 2018; Dølvik et al., 2018; Marginson, 2017; Visser, 2016). These contextual factors include, for example, the skill level of employees (e.g., Boeri and Burda, 2009), the technology used in companies (e.g., Schnabel, Zagelmeyer, and Kohaut, 2006) and the exposure of the company and sector to (international) competition (e.g., Traxler and Brandl, 2012). These elements were also found to matter for differences in interests towards decentralization and thus for the preferences of different actors regarding different systems of collective bargaining.

These preferences of different groups of employees and companies were historically not stable over time with different actors preferring different systems of collective bargaining at different times. While, for example, in Western Europe during the 1960s and 1970s employers urged for encompassing higher-level, i.e. sectoral and national, collective bargaining, trade unions often lobbied for decentralization (Traxler, 1995). Along with a changing labor market, the preferences of these actors completely turned from the 1980s onwards (Swenson and Pontusson, 2000). These shifts in the preferences of actors as well as shifts in the power between the employer and employee side – caused by changes in the labor market – have led to the incremental decentralization of collective bargaining in the past three decades (e.g., Marginson, 2017). Consequently, it has become increasingly possible for some companies and for some groups of employees to capture extra rents. This development has led to asymmetries across companies and employees and potentially adversely affected the most vulnerable of them, such as less-skilled employees, employees in companies which are exposed to international competition or young or small companies which do not have high market power (e.g., Müller, Vandaele and Waddington, 2019).

However, while the "*Zeitgeist*" of decentralization has led to very different reforms of collective bargaining systems in different countries and regions, often with a common denominator of favoring decentralized company level agreements, it has never led to a full erosion of historically grown collective bargaining systems (e.g., Boeri, 2014). Thus, decentralization never replaced national collective bargaining systems but rather made national collective bargaining systems more perforated, multi-layered, and complex, i.e. "hybrid" (e.g., Brandl and Bechter, 2018; Marginson, 2017; Visser, 2016). Consequently, institutional differences across countries have remained substantial (European Commission 2014), with the typical level of bargaining still predominantly explained by historically generated factors rather than by actors' current preferences (e.g., Hall and Soskice, 2001).

**The Level and Coordination of Collective Bargaining: Different Systems, Different Outcomes?**

Collective bargaining can take place between trade unions and individual companies or between trade unions and employers' organizations at different *levels*. Usually in literature three levels are differentiated ranging from the company, the sector, and the national level. Even though the sectoral and national level of bargaining are distinct layers, both levels are often merged into higher level bargaining, as national collective agreements have become increasingly rare in recent years throughout the EU. However, company and higher level bargaining are not necessarily exclusive and bargaining can take place simultaneously on the company and a higher level. In such *multi-level* (or multi-tier or –layer) *bargaining systems*, either the same or different issues can be negotiated on different levels. Thus, employees can be covered simultaneously by more than one collective agreement.

However, in all member states of the EU labor law allows trade unions and employers' organizations, but not necessarily companies, to choose - under certain conditions - independently the appropriate level, or specific mixtures of levels for their interaction. Thus the option to choose a preferred bargaining system can be considered to be highly restrictive from a company perspective.

In addition to the level at which bargaining takes place, collective bargaining systems also differ with respect to the *coordination* between different bargaining units. Coordination refers to the extent to which different units at the same or at different levels are integrated. However, the way different units are integrated varies across countries and regions. Using Aumayr-Pintar et al. (2014) categorization of coordination of collective bargaining, in some member states of the EU (Austria, Belgium, Denmark, Finland, Germany, Luxembourg, the Netherlands and Sweden) collective bargaining is coordinated as either peak employers' and trade union organizations (sometimes together with the state) impose certain rules, such as ranges and corridors for agreements, either formally or informally upon bargaining units, or alternatively, by a voluntary coordination via informal processes and norms such as via sectoral pattern bargaining (e.g., Traxler, Brandl and Glassner, 2008). Collective bargaining is *un*coordinated if none of the above process of coordination can be observed in a country, i.e. if bargaining units are fragmented and not committed or bound to any norm and coordination guideline.

While there were always debates in the literature about the importance of agreements at different levels for actual wages and working conditions as well as on the strength of coordination among different units (e.g., Aumayr-Pintar et al., 2014; Lindquist and Vilhelmsson, 2006), there is agreement that differences exist across companies, sectors and countries and that bargaining differs with respect to the degree of coordination and the level at which bargaining takes place (European Commission, 2014). That being said, there is (again) a debate about the effects of the degree of centralization and coordination on the performance of companies, sectors, and countries.

In the debate on the effects of different collective bargaining systems, the earlier "corporatist" literature focused mainly on the level at which bargaining took place and argued that the higher the level of centralization, the better the performance (e.g., Bruno and Sachs, 1985). The argument in favor of this position has been that an encompassing range of interests between companies and sectors can be covered. The idea behind the superiority of encompassing higher level collective bargaining is that all the costs and benefits of the collective agreement have to be internalized and there is no way for specific bargaining units to externalize the costs of their bargaining agreements to other units.

Against the background that the early theoretical reasoning struggled to find convincing empirical support, a seminal paper by Calmfors and Driffill (1988) argued that company level bargaining is associated with beneficial performance because competitive pressure ensures market efficient outcomes from company collective bargaining: market pressures ensure that company labor costs do not increase excessively so that labor productivity development is in line with market developments. They further argued that collective bargaining at a sectoral level is associated with a detrimental performance because there is little or no competition between sectors and thus sector bargaining allows some units to externalize the costs of excessive wage increases to be spread across other units. As Calmfors and Driffill (1988) agreed with the earlier theoretical reasoning on the performance of national collective bargaining, their theoretical relationship between different levels of collective bargaining and performance describes a non-linear (hump-shaped) relationship.

However, the Calmfors and Driffill (1988) thesis also struggled to obtain convincing empirical support and even faced several empirical counter examples. One of the most striking counter examples is Germany where encompassing sectoral bargaining prevailed but labor cost developments were perfectly in line with market developments. Thus, given the fact that sector level bargaining did not necessarily lead to a detrimental performance, the literature started to investigate the role of coordination between bargaining units as a relevant factor that might explain differences in the performance of collective bargaining systems. Most notably, Soskice (1990) argued that a system where sector level collective bargaining is coordinated can work as a functional equivalent to national collective bargaining. Thus, coordinated higher level bargaining is associated with a beneficial performance and some systems of coordinated collective bargaining can even outperform all other systems (e.g., Traxler and Brandl, 2012).

As bargaining units can exist at the same or on different levels, coordination encompasses both a horizontal and vertical dimension. Even though the specific way coordination works along the two dimensions varies across countries, what matters for performance is that it ensures an integrative interaction between different bargaining units. For example, coordination between sectoral bargaining units can work via pattern bargaining such as in Austria and partly in Germany and some Nordic countries (e.g. Müller et al. 2018; Traxler, Brandl and Glassner, 2008), where one sector sets a pioneering agreement that serves as an anchor and reference for (all) other sectors. Another form of coordination, which is characteristic for Nordic countries, is via the governance of the scope and range of collective bargaining at the lower level by central level peak employers' and union associations (e.g., Dølvik and Marginson, 2018; Traxler, Blaschke, and Kittel, 2001).

In the following empirical analyses, we utilize the classification of coordinated and uncoordinated systems from Aumayr-Pintar et al. (2014). Based on this classification we will investigate the performance of different collective bargaining systems. Specifically, the performance which will be measured by increases in labor productivity in companies of company level collective bargaining, coordinated and uncoordinated higher level collective bargaining as well as multi-level collective bargaining. This classification of different collective bargaining systems allows us to test the hypothesis that it is not necessarily important for the performance of a company whether a collective agreement *per se* applies, but rather the system of collective bargaining from which the agreement originates. More precisely and in line with Calmfors and Driffill (1988), we hypothesize that company level collective bargaining is associated with a superior performance compared to higher level collective bargaining because market pressures ensure that the labor productivity developments are aligned to market developments. We further hypothesize that the performance of company level collective bargaining is superior to individual bargaining because it is cost effective for companies. Company collective agreements reduce transaction costs by substituting one comprehensive negotiation for many individual negotiations (e.g., Schnabel, Zagelmeyer, and Kohaut, 2006). In contrast to Calmfors and Driffill (1988), however, we hypothesize that higher-level bargaining is not necessarily associated with an inferior performance. Instead, and in line with Soskice (1990) and Traxler (1995), we argue that coordinated bargaining is also beneficial, while only uncoordinated bargaining has negative effects on the performance of companies. In the following empirical analyses, we will test these hypotheses from different perspectives by using and testing different specifications and different definitions of collective bargaining systems.

**Data and Modelling Strategy**

To test the above hypotheses we use the 2013 wave of the European Company Survey (ECS), see Eurofound (2015). The ECS was conducted in spring 2013 and collects *representative establishment-level data* for businesses and organizations with 10 or more employees. The survey is based on interviews with human resource managers and employee representatives on various employment relations and collective bargaining issues in all current 28 EU member states. Any additional data on the macroeconomic and wider employment relations environment which is integrated into our analysis is taken from European Commission (2014, 2015). In the following we concentrate our analysis on the 28 EU member states, leading to a sample size of 22,008 establishments.

The focal independent variables for the tests of our hypotheses are the different systems of collective bargaining. We consider different systems in various specifications. In all specifications, we compare the performance of these systems with the performance of individual negotiations between the employer and employees, i.e. the absence of any collective agreement. We begin by comparing the performance of individual bargaining with the performance of companies which fall under any collective agreement in specification (1). We then analyze differences in the performance of collective bargaining in specification (2) by distinguishing between collective bargaining at the company and higher level. In specification (3) we differentiate further by separating the effects of single-level and multi-level collective bargaining systems. Specifications (4) and (5) mimic (2) and (3) but further differentiate between coordinated and uncoordinated collective bargaining.

In addition, the following controls are used across all specification: industry dummies (including a public/private sector differentiation) and various company and staff characteristics such as establishment size, dummies for being a company headquarters or a subsidiary site, shares of employees with open ended contracts, with university degrees, who are female, who work part-time and who are in highly-qualified jobs. As these factors potentially also affect preferences of actors with respect to collective bargaining systems (e.g., Schnabel, Zagelmeyer, and Kohaut, 2006) their inclusion in all models is essential.

In additional estimates, we include further company-specific control variables such as changes in remuneration practices, workplace technologies, products and services and production process are also included. The rationale behind their inclusion is not only that they might be related to changes in performance, but also that changes in the remuneration system and in the workplace technology on the one hand and changes in the products and production processes on the other do not necessarily affect labor productivity and total factor productivity symmetrically and might in fact lead to a substitution effect between "capital" and "labor". The estimation results are available in an online appendix. However, the interpretation of the specifications that include these variables needs some caution as these variables might well be influenced by the specific collective bargaining system pertaining to a specific company and thus can be thought of as mediators/intermediate outcomes rather than control variables.

We further control for additional institutional differences in the wider employment relations environment across countries by including dummies for presence of a works council and (grouped) membership in an employer organization and the presence of a union representative. To control for any further country differences in the business cycle and the wider economic environment that potentially influence the productivity of companies, we introduce several macro variables that are commonly used in the literature (e.g., Calmfors and Driffill, 1988; Flanagan, 1999; Johnston and Hancké, 2009; Soskice, 1990; Traxler, Blaschke, and Kittel, 2001). This set of macro controls are the change in log GDP from 2010 to 2013, the current tax burden, the average share of exports and imports in world trade, log of the total labor force in 2013, real unit labor costs for the total economy, the harmonized consumer price index and respective exchange rate with the Euro. For all these macro controls we include both the change from 2010 to 2013 as well as the level in 2013.

Our performance indicator is the change in labor productivity from 2010 to 2013, measured in two categories, "increased" or "decreased or remained the same". It is based on the question in the ECS: "Since the beginning of 2010, has the labour productivity of this establishment..." with answer categories "Increased", "Decreased", "Remained about the same", "Not applicable", "Don't know", and "No answer". While being a subjective and broad assessment of a company's situation, the ECS surveys asked exclusively senior managers who have information on the financial situation of the establishment and oversee personnel. Therefore, we would not expect any systematic biases in the answers (e.g., Kersley et al., 2005). As our main variables of interest, as well as most of our control variables, are dummy variables, leading to a quasi-saturated model (e.g., Angrist and Pischke, 2009, p. 91f.), it is innocuous to use a linear probability model, even though our outcome is binary. In fact and as expected, average marginal effects from Probit models give exactly the same results.

Labor productivity was used in literature before to analyze the effects of trade unions (e.g., Addison and Hirsch, 1989; Bryson and Forth, 2015; Doucouliagos, Freeman, and Laroche, 2017; Doucouliagos and Laroche, 2003) but not for the evaluation of a wide range of different collective bargaining systems. This is somehow surprising since the choice of labor productivity as the dependent variable has several principle advantages over other commonly used measures, such as wage related indicators, e.g., nominal wage levels and wage increases, wage premia, wage dispersion and excess wages (e.g., Boeri, 2014; Cardoso and Portugal, 2005; Daouli et al., 2013; Fitzenberger, Kohl, and Lembcke, 2013; Magda, Marsden, and Moriconi, 2012; Rusinek and Rycx, 2013).

One main advantage of choosing productivity developments over wage indicators is that collective bargaining is not exclusively about wages but also about working conditions such as working time (including hours of work, rest periods, work schedules and flexible work), remuneration forms and schemes (including wage and non-wage benefits and bonuses), innovation and organizational change regulations, as well as vocational training agreements, some of which might not influence wages but will have an impact on company productivity (e.g., Voss, Schöneberg, and Rodriguez Contreras, 2015). Looking only at wages as performance indicators would miss completely the effects of these regulations on working conditions, even though they are significant cost and investment factors and might influence the productivity of companies considerably. As a matter of fact, depending on the wage setting mechanism employed by a company, e.g. efficiency wages (e.g., Akerlof and Yellen, 1986), the link between wage levels and wage increases and productivity is highly complex so that wage increases do not necessarily result in productivity losses of companies (e.g., Hibbs and Locking, 2000; Lazear, 1995). In fact, productivity might even increase as non-wage issues which matter for productivity are regulated in the collective agreement (e.g., Windolf,1989).

A further important reason why company productivity is preferable is that it is regarded by (European) policy makers as one of the relevant success indicators in increasing competitiveness to guarantee sustainable economic growth (e.g., European Commission, 2016). Recently, the role of productivity as an explicit economic target for policy reforms including collective bargaining was highlighted by the European Commission (European Commission, 2018).

- TABLE 1 about here -

Table 1 gives an overview of the incidence of different bargaining systems in all EU member states and differentiated across employment relations regimes. In 37 percent of all companies in the EU employees are not covered by any collective agreement, while in 63 percent employees fall under some form of collective agreements. 33 percent of companies negotiate collective agreements at the company level, while 30 percent of companies are covered by agreements beyond the company level. These shares vary significantly across different employment relations regimes.

We also note that there is not a single employment relations regime that is characterized by the prevalence of a single collective bargaining system. In fact, we see clear evidence for a "hybridization", in the sense of Brandl and Bechter (2018), of national collective bargaining systems throughout the EU member states, as companies without collective agreements or with company- or higher-level agreements co-exist.

When looking at the share of companies which report productivity increases in the past three years, we find that the presence of a collective agreement in a company *per se* appears to be immaterial, as the share of companies with productivity increases is the same, 48 percent, independent of whether there is a collective agreement for the employees in the company or not. What appears more significant is the level at which collective bargaining takes place and, for higher level collective bargaining, the question of whether bargaining is coordinated or not. Consequently, the question of whether collective bargaining *per se* leads to a better performance than having no collective/individual bargaining at all appears to be less important than the specific collective bargaining system itself.

**Results**

Results of the hypotheses tests are shown in Table 2. The estimation results in specification (1) show that the performance of companies covered by (any) collective agreement is not significantly different from that of companies without any collective agreement. This finding, which is also in line with the descriptive evidence in Table 1, clearly supports our hypothesis that it is not collective bargaining *per se* which matters for performance.

However, we further hypothesized that different bargaining systems are associated with different performances, some of which are positive and some are negative. Therefore, specification (2) differentiates bargaining systems with respect to the level at which bargaining takes place, while specification (3) also takes the presence of multi-level bargaining into account. The results, displayed in columns (2) and (3), show that company-level collective bargaining is associated with a beneficial performance, while the performance of higher-level collective bargaining does not significantly differ from individual bargaining. This result is in line with our hypothesis that company-level bargaining is beneficial as it reduces transaction costs relative to individual bargaining but inconclusive with respect to the performance of higher level bargaining as well as multi-level bargaining systems. The implication of this result is that higher and multi-level collective and multi-level bargaining are not beneficial, but do not appear to be harmful for performance either.

We further hypothesized that the performance of any form of higher level bargaining depends upon the coordination of bargaining units, with coordinated bargaining suspected to be beneficial and uncoordinated bargaining suspected to be detrimental. The results from specifications (4) and (5), in which we differentiate between coordinated and uncoordinated systems of bargaining, fully support this hypothesis. Furthermore, looking at the size of the effects reveals a 13 percentage point difference in the probability to report productivity increases between companies covered by coordinated and uncoordinated bargaining – a much larger difference than found between any other forms of collective bargaining. The upshot of these findings is that the key element for the performance of collective bargaining system is the coordination among different units.

- TABLE 2 about here -

We also argued that companies are embedded in different historically grown economic, cultural and institutional environments in different countries and regions which matter for economic performance (e.g., Crouch, 1993). Based upon prominent literature on country classifications (e.g., Hall and Soskice, 2001), in the comparative employment relations literature, countries' collective bargaining systems are normally clustered into five regimes in which countries' collective bargaining systems share the same characteristics but which differ significantly from other regimes. These distinct regimes correspond to distinct groups of countries and are the Nordic, Continental, Liberal, Southern European, and Central and Eastern European regimes as previously discussed (European Commission, 2009).

Methodologically, these regimes form distinct groups of employment relations' systems with similar institutional characteristics of collective bargaining systems among the countries in each regime. Even though, the within-country and within-regime variation of collective bargaining systems increased in recent years (e.g. Bechter, Brandl, Meardi, 2012), there are still country and regime characteristics prevalent. We also estimated models including either regime or country fixed effects as an additional robustness check. While these control for any country or regime idiosyncrasies, they will also likely introduce attenuation bias towards zero as they remove most of the variation of interest. The results of these tests are shown in Table 3, which show the specifications with regime dummies. The results of the models including country dummies are qualitatively identical and are thus omitted to save space.

- TABLE 3 about here -

As expected, the estimated coefficients of all collective bargaining systems, with the exception of company level bargaining, are not significant in Table 3 as they are absorbed by the regime effects. Looking at the regime effects, it is clear that companies which are embedded in a CEE and Liberal employment relations regime perform relatively well in comparison with companies in Continental countries. We use the latter as a reference as the institutional characteristics of Continental regime place them in-between all others regimes. We also see that companies in Nordic countries do well, while companies in Southern European countries perform (relatively) poorly. Comparing these results with the incidence of the different bargaining systems across the different regimes (see Table 1), it seems that the regime dummies closely reflect differences in the incidence of collective bargaining systems. Thus, given that regimes (and countries) with similar incidences of distinct bargaining systems or the bargaining system itself show the same effect, the upshot of both analyses is that they confirm each other. That being said, bargaining systems at the company level and broad regime types are, of course, not exactly the same phenomenon. While the incidence of different bargaining systems at the company level is correlated with regimes and countries, the correlation is, of course, not perfect. Given the recent trend of decentralization, many national collective bargaining regimes are nowadays hybrid in the sense that different bargaining systems can be found within regimes and countries.

However, these regimes not only reflect today's differences between collective bargaining systems in different regions but are based on differences in the history, evolution and transformation of different systems of collective bargaining and therefore can be considered to be widely exogenously given to actors.

Nevertheless, not least because of the trend towards decentralization of collective bargaining in some countries, some actors might be offered a strategic choice with respect to collective or individual bargaining. In particular, the main drivers of decentralization in recent years – the facilitation of opt out clauses and the limitation of *erga omnes* clauses, i.e. the possibility to extend collective agreements to companies which are not involved in bargaining – enabled some companies to choose their preferred bargaining systems (e.g., Marginson, 2015). As a consequence, some companies in some countries are offered the choice to opt in or out of existing sectoral level agreements (e.g., Bárcena-Ruiz, 2003; Ramaswamy and Rowthorn, 1993) or have some choice between collective and individual bargaining (e.g., Boeri and Burda, 2009) if *erga omnes* clauses for the extension of collective agreements are absent or weak (e.g., Hayter and Visser, 2018). Even though the choices of companies are not only limited but also absent for many companies in many countries, it is at least conceivable that some companies choose the system of bargaining to enhance the productivity of the company.

This possibility is potentially problematic for our estimates as it could introduce selection bias. We address this issue in two ways. First, throughout the analysis we control for the main determinants of bargaining system choice identified in the literature. These include various contextual factors and establishment characteristics including for example the size of companies and employee characteristics such as skill and qualification (e.g., Schnabel, Zagelmeyer, and Kohaut, 2006). Second, in the following, we rerun the analysis for countries in which companies have no choice because collective agreements are either encompassing, as in the Nordic countries, or widely and "automatically" extended upon companies and opt out clauses are missing. Using the Aumayr-Pintar et al. (2014) categorization of opt out clauses and *erga omnes* extension mechanisms, this leads to a sample of countries including Austria, Belgium, Croatia, Denmark, Estonia, Finland, Luxembourg, the Netherlands, Portugal, Slovakia, and Sweden. Clearly, for companies in these countries there is little choice. The estimation results on the basis of this country sample, where companies have absolutely no or very limited choice, are shown in Table 4, which replicates the specifications from Table 2. In addition, we also used a less strict definition and included further countries in which companies can opt out of higher level agreements subject to strict conditions such as hardship criteria. These further robustness checks are available in an online appendix and confirm the results below.

- TABLE 4 about here -

As can be seen in Table 4, the results mimic those of the full sample shown in Table 2. Moreover, the sizes of the (statistically significant) coefficients are also very similar, which underlines the relevance of coordinated bargaining for the performance of companies. Thus, our results clearly show that rather than the level at which bargaining takes place, the coordination of higher level collective bargaining systems is decisive for performance.

A final concern, might relate to the classification of coordinated and uncoordinated bargaining systems. Our classification is based on Aumayr-Pintar et al. (2014), which is a widely-accepted categorization commonly used by academics and policy makers (e.g., European Commission, 2014). However, as for any categorization, some degree of fuzziness is unavoidable. To test the robustness of our results to such fuzziness we re-estimate our models omitting all observations from each country in turn. Table 5 presents the summary results from these estimates, specifically the average coefficient, the median, minimum and maximum coefficient and the percentage of estimates where the coefficient was significant.

- TABLE 5 about here -

The results of these tests support our main results from the previous tables. Again, the results clearly show that it is not collective bargaining *per se* which matters but distinct features of the bargaining system. In particular, it is again clear that coordination matters for performance, but not the level of collective bargaining. Furthermore, the results show that coordinated higher level collective bargaining is associated with the highest performance, followed by company level bargaining while uncoordinated higher level bargaining is associated with a detrimental performance. Looking at all tables, our results present a coherent picture across a range of different specifications and samples.

**Conclusion**

In this paper, we argued that there is uncertainty in the literature about the performance of collective bargaining. We further argued that one reason for this uncertainty might be a divergence between studies at the company and country level. Many company level studies focused predominantly on single countries or a very limited number of countries and therefore on within-country differences between sectors and companies and thus missed significant employment relations regime and country differences in bargaining system, such as in particular the role of coordination between different bargaining units. The latter, while typically considering issues such as coordination among bargaining units as a larger number of countries and regimes are analyzed, inevitably miss the high within-country variation of different bargaining systems. This paper aimed to bridge this gap in the literature by using company level data from all member states of the EU. Our analysis of the effects of a wide range of currently existing collective bargaining systems on the development of labor productivity took into account bargaining at different levels, measured at the company-level, as well as macro-characteristics such as the coordination of bargaining units. Our analysis thus captures the variation in different bargaining systems and their institution features, both within and across countries.

We hypothesized in the paper that the performance of collective bargaining at higher levels, i.e. above the company level, are contingent upon the coordination of bargaining between units. While coordinated higher-level bargaining was hypothesized to be associated with a superior performance, the opposite could be suspected for uncoordinated bargaining. Not differentiating between coordinated and uncoordinated collective bargaining might very well lead to a zero effect of higher level collective bargaining, as these differentiated effects might cancel each other out.

Our empirical tests showed that, on average, the performance of companies was not affected by whether employees in a company are covered by a collective agreement or not. We also showed that looking on the average effect over different bargaining systems is too broad brushed because what matters however is the system of collective bargaining, i.e. whether collective bargaining takes place at the company or at a higher, i.e. sector or national, level as well as whether collective bargaining is coordinated across different bargaining units. Our analysis showed that there are systems of collective bargaining – specifically uncoordinated systems – that appear to be detrimental to company performance, while the opposite can be said about coordinated systems. In addition, company-level bargaining was found to be associated with a superior performance relative to individual bargaining while multi-level bargaining was found to have no effect.

Consequently, the question of whether collective bargaining *per se* leads to a better performance rather than having no collective/individual bargaining at all appears to be not meaningful at all. Thus, from a policy making perspective, any discussion on whether individual bargaining should be promoted legally or institutionally in expense of collective bargaining or collective bargaining should be abolished is also meaningless. The more important question seems to be: which bargaining system is associated with which performance? Given the current debate among policy makers, namely a preference for further decentralization of national collective bargaining systems, our results show that many previous reforms of collective bargaining systems towards decentralization might not have led to the outcome that was expected. If the reforms have replaced collective bargaining by individual bargaining the effect might have been weak or absent and if the reforms have strengthened uncoordinated multi-level collective bargaining systems the effects of the reforms might have been even detrimental.

However, our results also suggest that there might be more options available for institutional reforms than hitherto considered by policy makers and policy advisors including the EC, the ECB, the OECD and most notably the IMF who all played an important role in the reform of collective bargaining systems in many countries in the past decades. As regards such options, our results show that when decisions have to be made on the transformation and reform of collective bargaining policy makers should concentrate more on reforms that enable collective bargaining units to coordinate their bargaining activities more intensively. More specifically, policy makers as well as collective bargaining actors themselves should consider coordinated sectoral collective bargaining as a reform target as our results underline the economic benefits that are associated.

Of course, any reform away from the advice to further decentralize collective bargaining towards coordinated sector collective bargaining would be not only different to the "*Zeitgeist*" of the past two or three decades but also involves some risks for policy makers. The reason for the latter risk is that coordination of collective bargaining units is dependent on the cooperation of collective bargaining actors themselves and such a coordination cannot be enforced or imposed from outside, e.g. by an international organization. Thus, any such reform would need the support of the actors involved which includes both the employee and employer side and their willingness to cooperate and coordinate their activities. As shown in our analysis, if the cooperation of actors fails the outcome might be detrimental but if it succeeds the first best outcome is achievable.

The upshot of the above is that any reform of collective bargaining that targets the best performance that is achievable is certainly difficult to realize as it is dependent upon the cooperation of the employee side, i.e. of trade unions, and of the employer side, i.e. employers' organizations across and at different levels and sectors. However, the state as well as international organizations can foster the functioning by not only providing a stable institutional framework, e.g. via encompassing sectoral extension regulations of collective agreements, but also by support in capacity building which includes that collective bargaining actors are supported in building up trust. Thus more effective and successful reforms of collective bargaining are certainly more demanding by all actors involved but are also enabling a higher performance.

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Table 1. Overview of the prevalence of bargaining systems

| | Companies reporting productivity increase | Prevalence | Prevalence by employment relations regime | | | | |
|---|---|---|---|---|---|---|---|
| | | | CEE | Liberal | Southern | Nordic | Continental |
| No CB | 48% | 37% | 66% | 52% | 16% | 15% | 27% |
| Any CB | 48% | 63% | 34% | 48% | 84% | 85% | 73% |
| *Levels of bargaining:* | | | | | | | |
| Company CB | 51% | 33% | 30% | 37% | 33% | 34% | 33% |
| Higher level CB | 45% | 30% | 4% | 11% | 51% | 51% | 40% |
| *Of which:* | | | | | | | |
| Coordinated | 54% | 14% | 0% | 0% | 0% | 51% | 40% |
| Uncoordinated | 37% | 16% | 4% | 11% | 51% | 0% | 0% |
| Observations | 22,008 | | 6,693 | 2,311 | 5,874 | 2,723 | 4,407 |

NOTE: Collective bargaining (CB)

Table 2. Bargaining systems and increases in labor productivity

| Differentiation | No | Level | | Coordination | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Any CB | 0.009 | | | | |
| | (0.008) | | | | |
| Company CB | | 0.025*** | 0.020* | 0.027*** | 0.019* |
| | | (0.008) | (0.010) | (0.008) | (0.010) |
| Higher and multi-level CB | | -0.002 | | | |
| | | (0.008) | | | |
| Coordinated | | | | 0.070*** | |
| | | | | (0.011) | |
| Uncoordinated | | | | -0.062*** | |
| | | | | (0.009) | |
| Higher level CB | | | -0.005 | | |
| | | | (0.010) | | |
| Coordinated | | | | | 0.065*** |
| | | | | | (0.011) |
| Uncoordinated | | | | | -0.068*** |
| | | | | | (0.011) |
| Multi-level CB | | | 0.009 | | 0.016 |
| | | | (0.014) | | (0.014) |
| Observations | 22008 | 22008 | 22008 | 22008 | 22008 |

NOTE: Coefficients, robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Company level controls are membership in an employer organization, the presence of a union representative, establishment size (3 dummies), public/private sector, dummies for being a company headquarter or a subsidiary site, presence of a works council and (grouped) shares of employees with open ended contracts, with university degrees, who are female, who work part-time and who are in high-qualified jobs. Macro controls are change (all changes refer to a change from 2010 to 2013) in log GDP, the current tax burden (change and level), the average share of exports and imports in world trade (change and level), log of the total labor force, real unit labor costs for the total economy (change and level), the harmonized consumer price index (change and level) and respective exchange rate with the Euro (change and level).

Table 3. Bargaining systems and increases in labour productivity, controlling for national bargaining regime types

| Differentiation | No | Level | | Coordination | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Any CB | 0.019** | | | | |
| | (0.008) | | | | |
| Company CB | | 0.022*** | 0.022** | 0.022*** | 0.021** |
| | | (0.008) | (0.010) | (0.008) | (0.010) |
| Higher and multi-level CB | | 0.011 | | | |
| | | (0.008) | | | |
| Coordinated | | | | 0.021 | |
| | | | | (0.016) | |
| Uncoordinated | | | | 0.005 | |
| | | | | (0.011) | |
| Higher level CB | | | 0.011 | | |
| | | | (0.010) | | |
| Coordinated | | | | | 0.020 |
| | | | | | (0.016) |
| Uncoordinated | | | | | 0.004 |
| | | | | | (0.012) |
| Multi-level CB | | | 0.001 | | 0.001 |
| | | | (0.014) | | (0.014) |
| CEE | 0.027** | 0.025* | 0.024* | 0.031** | 0.031** |
| | (0.014) | (0.014) | (0.014) | (0.015) | (0.015) |
| Liberal | 0.033** | 0.032* | 0.031* | 0.039** | 0.039** |
| | (0.016) | (0.016) | (0.016) | (0.018) | (0.018) |
| South | -0.142*** | -0.141*** | -0.141*** | -0.132*** | -0.132*** |
| | (0.012) | (0.012) | (0.012) | (0.015) | (0.015) |
| North | 0.101*** | 0.102*** | 0.102*** | 0.100*** | 0.100*** |
| | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) |
| Observations | 22008 | 22008 | 22008 | 22008 | 22008 |

NOTE: Coefficients, robust standard errors in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$. See footnote for Table 2 for description of control variables.

Table 4. Bargaining systems and increases in labour productivity, only countries where companies cannot choose bargaining systems

| Differentiation | No | Level | | Coordination | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Any CB | 0.018 | | | | |
| | (0.015) | | | | |
| Company CB | | 0.027** | 0.034* | 0.028** | 0.039* |
| | | (0.013) | (0.020) | (0.013) | (0.020) |
| Higher and multi-level CB | | 0.003 | | | |
| | | (0.014) | | | |
| Coordinated | | | | 0.030* | |
| | | | | (0.028) | |
| Uncoordinated | | | | -0.075*** | |
| | | | | (0.024) | |
| Higher level CB | | | 0.007 | | |
| | | | (0.016) | | |
| Coordinated | | | | | 0.036** |
| | | | | | (0.028) |
| Uncoordinated | | | | | -0.070*** |
| | | | | | (0.025) |
| Multi-level CB | | | -0.011 | | -0.017 |
| | | | (0.025) | | (0.025) |
| Observations | 8031 | 8031 | 8031 | 8031 | 8031 |

NOTE: Coefficients, robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. See footnote for Table 2 for description of control variables.

Table 5. Leave-one-out estimates

| Variable | Avg. coefficient | Median coefficient | Minimum coefficient | Maximum coefficient | % of estimates where coefficient is significant |
|---|---|---|---|---|---|
| | | | Specification (1) | | |
| Any CB | 0.009 | 0.009 | 0.003 | 0.020 | 11 |
| | | | Specification (2) | | |
| Company CB | 0.025 | 0.024 | 0.019 | 0.031 | 100 |
| Higher and multi-level CB | -0.002 | -0.002 | -0.014 | 0.014 | 0 |
| | | | Specification (3) | | |
| Company CB | 0.020 | 0.020 | 0.011 | 0.026 | 39 |
| Higher level CB | -0.005 | -0.005 | -0.016 | 0.015 | 0 |
| Multi-level CB | 0.009 | 0.010 | -0.004 | 0.018 | 0 |
| | | | Specification (4) | | |
| Company CB | 0.027 | 0.027 | 0.021 | 0.032 | 100 |
| Higher and multi-level CB | | | | | |
| Coordinated | 0.070 | 0.070 | 0.056 | 0.095 | 100 |
| Uncoordinated | -0.061 | -0.063 | -0.070 | -0.039 | 100 |
| | | | Specification (5) | | |
| Company CB | 0.019 | 0.019 | 0.008 | 0.025 | 21 |
| Higher level CB | | | | | |
| Coordinated | 0.064 | 0.064 | 0.052 | 0.087 | 100 |
| Uncoordinated | -0.068 | -0.069 | -0.075 | -0.042 | 100 |
| Multi-level CB | 0.016 | 0.017 | 0.005 | 0.026 | 0 |

NOTE: Coefficients, robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. See footnote for Table 2 for description of control variables.